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Behaviour and Climate Change: Consumer Perceptions of Responsibility

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Abstract.

This paper explores the under-researched notion of consumer responsibility, a potentially significant influence on consumer behaviour that marketers and policy-makers may be able to harness as they attempt to respond to environmental challenges such as climate change. The paper uses data derived from a commercially motivated survey (n = 1513) to explore domestic consumption behaviours most closely associated with the issue of disruptive climate change. A measure of 'General Environmental Responsiveness' (GER) is used to test (1) the effects of both consumers taking responsibility for their actions and placing responsibility on others for their consumption behaviour and (2) whether socio-demographic variables can aid the targeting of consumers by the level and type of responsibility and pro-environmental behavioural intentions expressed. The study's findings demonstrate clear, if not strong, relationships between consumer conceptions of responsibilities for causing and tackling climate change and environment-related consumer behaviour. The study's implications both challenge accepted wisdom about environment-related consumer behaviour and suggest avenues for future research.

Keywords: Consumer Responsibility, Environmental Responsiveness, Climate Change, Socio-Demographic Variables

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Introduction: Motivating More Sustainable Consumption.

Scientific evidence is creating a consensus that economic growth has placed an unsustainable burden on the physical environment. Over-consumption, resource use and the generation of pollution and waste are degrading environmental systems and the '*ecosystem services*' they provide and which people depend upon, directly and indirectly, for their survival and wellbeing (WRI, 2005). In the case of the most pressing environmental challenge, preventing and/or responding to disruptive climate change, it has significant implications for the global economy. The evidence review by the eminent economist Sir Nicholas Stern (2006) forecast that unless 1% of GDP is invested in responding to the climate challenge (later increased to 2% to reflect continuing inaction), then the negative consequences could shrink the global economy by 20% by 2035. The need to move to a lower carbon economy is therefore a pressing strategic challenge widely acknowledged by both policy makers and businesses.

Moving towards a lower carbon economy requires a range of possible levers to be employed including technological innovation, regulation, investment, financial incentives, organisational change and education. Carbon emissions are also strongly linked to the consumption of private households and the choices and behaviours of individuals. Motivating consumers to adopt more sustainable consumption behaviours is therefore an important policy goal and a source of potential commercial marketing opportunities. It has therefore become a focus for academic research, much of which was comprehensively synthesized by Tim Jackson (2005) in his research monograph '*Motivating Sustainable Consumption*'. Jackson's synthesis, together with other studies

(e.g. Moisander, 2007), demonstrate that consumer behaviour is a complex and multidimensional phenomenon, which is further complicated by the inclusion of sustainability concerns. They also highlight the range of factors thought to influence consumers' sustainability-related behaviours including their demographics, values, attitudes, knowledge, goals, emotions and circumstances. Behaviour can also vary according to the nature of the purchase, including its social significance and the situational influences of the time and place of purchase.

There is a myriad of potential influences on consumer behaviour in relation to sustainability which researchers have tried to identify and measure. Many of these, such as goals, attitudes, social identity, perceived self-efficacy and situational forces are incorporated within conventional integrative models of consumer behaviour (such as Bagozzi's et al's 2002 "Comprehensive Model of Consumer Action") and have also been well-researched in conventional, as well as sustainable, consumption contexts. Other potential influences are more characteristic of models of behaviour developed specifically to explain environmentally and socially motivated behaviours. Grob's (1995) Model of Environmental Behavior for example found that environmental knowledge together with personal values, perceived control and emotional response determined environmental behaviour. Some influences are features of models developed by extending existing models of consumer behaviour, with the Theory of Planned Behavior (TPB) being a particularly popular basis. For example, Oom Do Valle et al. (2005) extended the TPB with elements from other models of altruistic behaviour, environmental behaviour and environmental concern to create a comprehensive model of recycling behaviour. This

included very behaviour-specific influencing factors such as knowledge about recycling, and perceived convenience of local recycling systems.

It is unusual to find a potential behavioural influence which is relatively generic (ie. not specific to a particular environmental behaviour such as recycling), yet appears only in those models of consumer behaviour developed to explain social or environmental consumption behaviour. One such factor, is a sense of '*responsibility*' and how it is perceived and ascribed by consumers. This is a key feature of Stern et al.'s 1999, Value Belief Norm Model, but has otherwise been generally neglected by researchers interested in pro-environmental consumer behaviour. This paper seeks to further our understanding of how consumer perceptions about responsibilities may influence their behaviour in the context of climate change. It explores this issue with regard to those domestic consumption behaviours most closely associated with the issue of disruptive climate change.

Profiling Consumers for Sustainability

Sustainability orientated consumer research encompasses a variety of concepts of more sustainable consumption using a range of labels for consumers and their behaviour (including green, greener, sustainable, pro-environmental, pro-social, environmentally conscious, altruistic, ecological, ethical or alternative, see Jackson, 2005). The key streams of this research involve profiling consumers in relation to sustainability concerns to enable markets to be meaningfully segmented (Straughan and Roberts, 1999); profiling types of consumer to understand how they might be motivated to consume more sustainably (Jackson, 2005); testing the acceptability of price premiums for more sustainable products (Laroche et al., 2001); and exploring why there is frequently a significant gap between consumers' reported willingness to consume more sustainably, and actual behaviour (Vermeir and Verbeke, 2006).

One contentious issue affecting early attempts at profiling consumers and segmenting markets for sustainability were that they were often largely based on socio-demographic variables (Straughan and Roberts, 1999). However as Schlegelmilch et al. (1996) note, this reflected the ease with which such variables could be applied and measured rather than any very strong theoretical or conceptual arguments. As the body of research expanded, the value of using socio-demographic variables became increasingly contentious, particularly given the tendency for different studies to produce inconclusive and contradictory results for particular demographic variables (Kilbourne and Beckman, 1986; Robinson and Smith, 2002). Diamantopoulos et al. (2003) provide a critical review of the literature linking socio-demographics to environmentally-orientated consumer attitudes and behaviours. They conclude that socio-demographics alone are of limited

value for profiling, but are more potentially useful when used in combination with other influences such as values, attitudes or knowledge. This study builds on this insight by testing the value of socio-demographic variables when used with other socio-psychological variables, in this case, the under-researched notion of consumer responsibility in relation to the environment and climate change.

Research profiling consumers and segmenting them in terms of sustainable consumer behaviour also has another acknowledged weakness, which is a tendency to focus on individual behaviours (such as recycling or purchasing of a particular type of product) and on specific impacts such as energy usage (Spangenberg and Lorek, 2002). This is problematic because the research literature indicates that while some types of sustainable behaviour are influenced by factors such as values, others are not. Even amongst those behaviours influenced by values, particular values influence different behaviours in different ways (Pepper et al. 2009; Barr, 2007; Corraliza and Berenguer, 2000).

Another problem with the over-emphasis on individual behaviours and impacts is that it is the cumulative impact of all a consumer's behaviour that is significant. This is demonstrated by the 'rebound effect' associated with behaviours such as energy saving. Reducing domestic energy use apparently lessens a consumer's environmental impact, but if the resulting financial savings are spent on energy intensive goods and services, this may not be the case (Herring, 1999). This paper seeks to gain insight into overall consumer lifestyles and their sustainability by considering a range of behaviours and by seeking to evaluate their net effect in relation to climate change.

Evolving Notions of Consumer Responsibility

Corporate Social Responsibility (CSR) has received considerable attention academically (recent examples include Peng 2009 and Jenkins 2009) and in the wider media. Other notions of business responsibility, and particularly an equivalent concept of '*consumer social responsibility'*, have received comparatively little attention (Brinkman and Peattie, 2008). This may be due to the dominance of the notion of consumer sovereignty, which assigns power as opposed to responsibility to consumers, as a key principle underpinning the marketing discipline.

When the existing marketing literature does consider the social responsibility of consumers, it has mostly restricted itself to questions of the behaviour of the consumer rather than the company, and of consumer dishonesty rather than on more positive behaviours (Brinkman and Peattie, 2008). However, there is an emerging normative concept of the '*citizen consumer*' which Gabriel and Lang (1995: 175) define as '*a responsible consumer, a socially-aware consumer, a consumer who thinks ahead and tempers his or her desires by social awareness, a consumer whose actions must be morally defensible and who must occasionally be prepared to sacrifice...*'. In marketing, such a concept of consumer responsibility is still under-developed, but looking across other disciplines of social science scholarship such as health, notions of personal responsibility tend to be more prevalent (see for example, Attell-Thompson, 2005 and Bricas 2008).

Although such a sense of personal responsibility might be expressed by consumers through self-sacrifice, potentially more significant would be a sense of personal responsibility as an individual being extended to a sense of responsibility as a consumer for the behaviour of the companies they patronise. Williams (2005) discusses the role consumers could play, suggesting an increasing role for consumer social responsibility to complement CSR. Reporting results from the '*Which? Bite Back*' survey, Williams suggests that, since 66% of consumers believe they can influence a company's environmental and ethical behaviour, they might therefore be prepared to accept some responsibility for how companies behave. He urges the development of a proactive notion of consumer social responsibility that encourages more socially and environmentally favourable behaviour by companies. The link between consumer power and responsibility is also raised by Peters (2005) reporting on the practices of the Dutch Consumer Association, which support the notion that consumers can affect, and therefore bear some responsibility for, the practices and policies of companies. There have also been some empirical studies linking consumer behaviour as '*voting behaviour*' to perceptions of consumer responsibility (see for example Dickinson & Carsky, 2005).

Even where the consumer is potentially willing to adopt this type of responsibility and seek to influence companies, their ability to do so will depend upon the availability of relevant information (Williams, 2005; Barnett et al. 2005). This could include information relating to companies' practices and policies (Peters 2005) and to the consequences of consumers' choices. However information alone will not guarantee that consumers respond. Too much information can create a sense of 'information overload'

which deters a response (Jacoby 1984, Hahn, Lawson and Lee 1992). Consumer response also depends on their ability to understand the information, but as Shaw and Clarke (1999) note, individuals are often confused about environmental issues and are inconsistent in making connections between an issue like climate change and aspects of their own lifestyles and consumption (Anable et al., 2006). Ability to act on relevant information will also depend on the consumer's sense of perceived behavioural control (Giles and Cairns 1995, Armitage and Conner 2001) and their wider sense of self-efficacy (Terry and O'Leary 1995).

In relation to sustainability issues (including climate change) and responsibility, the research emphasis has often been on who is responsible for particular problems, or who should bear responsibility for addressing them. Rodrigues et al. (2005) and Lenzen et al. (2007) use ecological economics to frame responsibility in terms of ascribing who is accountable for a) environmental pressure and b) the environmental impacts of producers or consumers respectively. Similarly Munksgaard and Pedersen (2001) sought to ascribe responsibility for CO_2 emissions from a policy perspective. From a marketing perspective, what is more significant is the consumer's *sense of* responsibility, and how they perceive and ascribe responsibilities for the environmental consequences of products, production impacts, purchase behaviour, and consumption and disposal behaviours. For companies and policy makers seeking to develop more sustainable systems of consumption and production, the role that consumers' sense of responsibility plays in their willingness to engage in pro-environmental behaviour (PEB) is potentially vital and needs to be researched and understood.

Awareness of the potential importance of consumer responsibility appears to be growing. Kaiser and Schimoda (1999: 244) in discussing the psychology of PEBs stress the need to develop personal responsibility stating that "*If a person is aware of the consequences of certain behaviour, the ascription of personal responsibility becomes crucial*." This was reflected in the recent EU campaign '*You Control Climate Change'*[1], in which consumers are urged to take responsibility by turning down the thermostats in their homes, switching off their appliances, recycling and walking. Similarly the research which underpinned the UK Sustainable Development Commission's '*I Will If You Will*' report (Sustainable Consumption Roundtable 2006) highlighted the importance of a sense of shared responsibility.

Despite the growing emphasis on consumer responsibility, it remains under-researched (Carrigan and Attalla 2001), and is mostly discussed normatively and theoretically (for example Caruana and Crane 2008). Relatively little empirical work has built on these ideas, and that which does exist explores the idea with a relatively narrow focus (see for example Wray-Lake et al., 2010 which only explores adolescent behaviour). There is an irony that "environmentally responsible" is one of the more commonly used labels for more sustainable consumer behaviour, when consumer environmental responsibility remains a comparatively under-researched and poorly understood concept.

[1] http://ec.europa.eu/environment/climat/campaign/index.htm

Understanding Consumer Socio-Environmental Responsibility

There are several problems with the existing literature when seeking to understand the motivations behind PEB, and the role played by consumers' sense of, and ascription of, responsibility. Firstly, there is what Jackson (2005) describes as a '*well-informed confusion*' in the academic literature resulting from the differing definitions and terminology used (often interchangeably), especially the wide range of titles applied to sustainability-orientated consumption behaviours (as noted above) and the varying terms describing different types of responsibility. For simplicity this article will use PEB to describe pro-environmental behaviours in the context of climate change, since most of the major PEBs such as recycling, energy-saving, travel and purchase reduction are also specifically pro-climate.

Secondly, much of the early work uses a very narrow conception of social responsibility. Webster's (1975) early extensive exploration of the '*socially conscious consumer*' used as the dependent variable a measure of social responsibility, based on a scale developed by Berkowitz and Lutterman (1968) and refined by Anderson and Cunningham (1972). Even Webster concedes that this scale '*defines social responsibility in a rather specific (and perhaps outdated) way*' by basing it on the acceptance of norms, involvement in community affairs and identification with the protestant work ethic. It is perhaps unsurprising that he found no relationship between a sense of social responsibility using that measure and socially conscious consumer behaviour.

A third weakness in the literature is a tendency to consider '*social responsibility*' as a broad construct, and to assume that concepts like social responsibility, environmental responsibility and altruism are interrelated and can be used interchangeably. Tucker et al. (1986) sought to break down the differences between general social responsibility (also commenting on work by Berkowitz, this time Berkowtiz and Daniels, 1963) and specific individual responsibility. They suggested that individual environmental responsibility was a subset of social responsibility, and that the term individual social responsibility can be used interchangeably with altruism or pro-social behaviour (although work on specific environmental altruism appears to be lacking in the literature). As with other authors, Tucker et al. attempt to understand the characteristics, whether psychological, attitudinal or socio-demographic of what they term '*environmentally responsible consumer citizens*' but do not then go on to discuss how specifically this may affect their behaviour and consumption choices.

The literature on ethical consumption encompasses issues beyond the environment including oppressive regimes, human rights, factory farming and political donations (Harrison, Newholm and Shaw 2005). Broad measures of social responsibility or ethical consumption may be unhelpful for understanding consumer behaviour in relation to more specific environmental issues. A political activist with strong views on human rights or political donations, and an environmental activist with strong views on factory farming might have little interest in each other's agendas or priorities. In some cases these might even conflict. Ever since Kinnear et al. (1974) sought to identify the '*ecologically concerned consumer*' by simply extending Anderson and Cunningham's

(1972) '*Social Responsibility Scale*', the working assumption within marketing scholarship has been that the socially and environmentally concerned consumer will be much the same thing. However, this is a significant assumption, and a misanthropic animal lover would be a simple confounding example. Similarly the research on how environmental concerns impact on consumer behaviour have overused broad measures of environmental concern (Follows & Jobber, 2000), whereas more specific environmental issues (such as animal cruelty or concerns about genetic modification) are more strongly correlated with actual behaviour (Fraj and Martinez, 2007).

A fourth weakness is the tendency for research to focus on consumer perceptions of their personal responsibility in relation to an issue, without attempting to understand the perceived allocation of responsibility to others. For example if consumers feel that others such as governments or businesses are more responsible than themselves for causing climate change, how would this affect their own behaviour and attitudes? Zaccaï (2006) observed that the attitude-behaviour gap often noted amongst consumers with strong pro-environmental attitudes was linked to uncertainty about consumer effectiveness combined with an expectation that government should tackle sustainability issues through regulation. There is little research attempting to apply a broader, multi-stakeholder perspective to responsibility, although Rodrigues and Domingos (2008) did seek to apply mathematical modelling to determine how much responsibility should be placed on the company (the producer), the consumer (households, capital purchasers etc) and intermediaries in an attempt to monitor and resolve environmental problems. Similarly Wray-Lake et al. (2010), examine the ascription of responsibility amongst

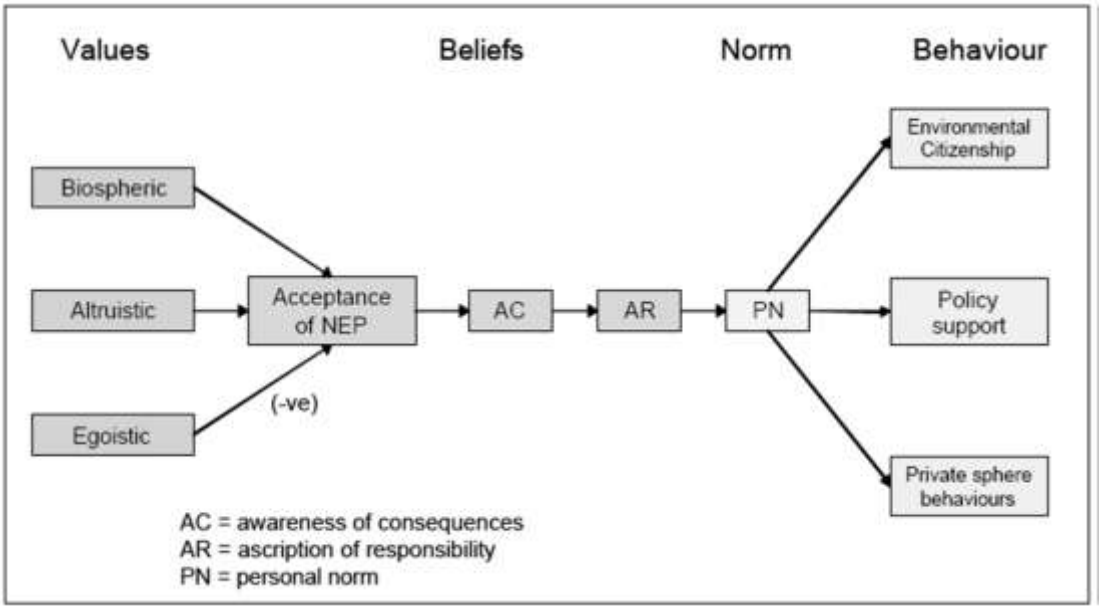
adolescents between individuals, consumers and government in environmental behaviours including consumption. They found a declining sense of responsibility amongst adolescents over time, and a tendency to ascribe responsibility to government or an abstract notion of 'consumers' rather than to themselves.

Perhaps because of these difficulties, research focussing on the links between consumer responsibility and PEB, and which takes the ideas of consumer responsibility beyond a normative and theoretical discussion, remains a rarity. Kaiser and Schimoda (1999) did look specifically at the link between responsibility and what they term ecological behaviour. They broke down the responsibility concept suggesting two specific responsibility feelings, feeling morally (related to causality, freedom of choice and intentionality) or conventionally (related to desire for approval and fear of atonement) responsible for the environment. They found that moral responsibility is more closely linked to PEB, especially in terms of causality (that is how much a person feels they cause the problem). Overall they suggest that 55% of a person's PEB can be explained by what they term, a responsibility judgement.

Within the '*Motivational, Moral and Value Theories*' school of research into pro-environmental behaviours (Vinning and Ebreo, 2002), responsibility as a concept features mainly within Norm Activation Theory (Schwartz, 1968 and 1977). This proposes that personal norms which drive behaviour are the result of (1) awareness of consequences and (2) feelings of responsibility for carrying out the behaviour. Since Schwartz's theory is unusual in seeking to explain specifically ethical consumption, it has been widely used

to understand and to predict PEBs such as recycling (Hopper and Nielsen 1991; Vining and Ebreo 1990 & 1992), household energy saving (Black et al. 1985) or reduced private car use (Bamberg and Schmidt, 2003). Schwartz's Norm Activation Theory has also been developed further into Value Belief Norm (VBN) theory by integrating it with ecological value theory (Stern et al. 1999, Stern 2000, Hansla et al. 2008). The VBN model (Figure 1) proposes that behaviour is shaped by consumer values, particularly in relation to their acceptance of the need for a '*new environmental paradigm*' (NEP), their awareness of the consequences of behaviour and their sense of responsibility towards the environment (which Stern et al. 1999 articulated as the personal norm of '*a sense of obligation to take pro-environmental actions'* (p.90)).

Figure 1: VBN Model



Promisingly, in use this model performed better than competing value-based models in explaining variances in consumer behaviour. However, the correlations were relatively weak, explaining less than 35% of behavioural variance, and for private sphere (i.e. consumption) behaviours, the explained variance was less than 20% (Stern, 2000).

The potential practical gap between such values and beliefs and actual behaviour was also demonstrated by Bickman's (1972) study on littering. In a survey of 500 people's attitudes to littering, 94% of interviewees acknowledged a sense responsibility for dealing with litter, but only 2% of those interviewed were observed to pick up a strategically planted piece of litter as they left the study venue.

Overall there is little consensus about the issue of environmental or climate change responsibility and its effect on behaviour or behavioural intention. This paper seeks not to clarify all aspects of responsibility, but to look instead at two specific areas (1) the effect of both the consumer taking responsibility for their actions and the consumer placing responsibility on others for their consumption behaviour and (2) whether socio-demographic variables can aid the segmentation and targeting of consumers based on their self-perceived level and type of responsibility, and their self-reported PEBs. In short the issue addressed here is not specifically the concept of responsibility, but whether responsibility matters in terms of behaviour. Does the responsibility orientation of a consumer, whether or not they feel responsible for (or think someone else is responsible for) climate change affect their behaviour? This links specifically into the causality idea of Kaiser and Schimoda (1999). Understanding this better will help policy makers and businesses to create more effective polices and practices that encourage and promote desirable behaviours, especially in terms of consumption.

To summarise, the main research questions were:

(1) What is the role of demographic variables in consumers' environmentally related behaviours?

(2) What is the role of demographic variables in consumers' responsibility orientations (who the consumer feels is responsible for causing and tackling climate change)?

(3) What role do differing responsibility orientations and agreement with a range of attitudinal statements have in environmentally related behaviour?

Methodology

This research is based upon a partnership project between the Centre for Business Relationships, Accountability, Sustainability and Society (BRASS) at Cardiff University and the Future Foundation consultancy, exploring issues of climate change, consumer behaviour and the future of brands. The research involved a range of qualitative and quantitative dimensions including questionnaires, interviews, household 'deep dives', and Delphi research involving an expert panel. The issue of responsibility was tackled in the qualitative stages (the results of which will not be considered here) which informed the development of the responsibility questions in the questionnaire. The research was predominantly funded through a consortium of commercial businesses and public sector organisations acting as sponsors.[2]

[2] The authors would like to acknowledge the support of the ESRC's Business Engagement Scheme which funded BRASS's involvement in this research partnership and the secondment of a researcher.

The quantitative questionnaire was hosted online utilizing a randomly selected nationally representative panel provided by Research Now[3]. In the questionnaire alone a panel of 1513 consumers were questioned regarding their behaviours, attitudes and beliefs about their consumption behaviour and climate change. Panel members' profiles ensured that their selection fulfilled sampling criteria, which in this case was for a geo- and socio-demographically representative sample which was obtained. Respondents received a small incentive from Research Now for the completion of questionnaires, and thus there was little attrition with the survey.

This questionnaire was neither originally designed, nor data the collected, with this specific analysis in mind, which imposes some limitations on the dataset and the possible analyses. The data was also not specifically tailored to either academic research or primarily focused on the issue of responsibility. The measures involved would probably have been designed differently had the research been intended for this specific purpose. However, the data generated is rich and the sample is large, so an exploration of the issues can certainly be commenced. A conservative statistical approach was used for these reasons, and the results should be interpreted as exploratory and tentative. They do however suggest the need for deeper, more tailored and further future research into the area.

[3] Research Now owns the largest online panel in the UK, comprising of 400,000 consumers. The Research Now UK panel is one of the most robust and deeply-profiled panels in the UK with extensively profiled information on a range of subjects e.g. respondent region, age, social class, household size and status, cars owned, mobile phones owned and networks used, bank and financial products used, TV packages in the home, ailments suffered plus much more http://www.researchnow.co.uk/Panel_UK.htm (accessed 18/11/08)

This paper concentrates on a number of sections of the research questionnaire, specifically those questions relating to consumers' pro- or anti-environmental behaviours, their feelings about responsibilities for both causing and tackling climate change, along with some general attitudinal statements. The responsibility questions offered the answer choices of : *'me as an individual', 'other individuals', 'extracting industries', 'manufacturing companies', 'service industries', 'central government', 'local government', 'NGOs/Not for profit organisations', 'local community groups', 'developing countries', 'other'* and *'don't know'*. Respondents could answer yes or no for each of these choices. A range of attitude statements were also used (which are presented and discussed in the results section). These were answered using 5-point likert scales from strongly disagree to strongly agree.

The analyses required a measure of behaviour or behavioural intention to act as dependent variable and to assess the effects of, or correlations with, different aspects of responsibility. The questionnaire asked a range of questions regarding consumers' behaviours from reduction, reuse and recycling behaviours to travel, shopping and energy consumption behaviours. The behaviour measure simply scored them on the number of reported PEBs minus any reported anti-environmental/negative behaviours. The measure, termed General Environmental Responsiveness (GER) had a possible minimum score of -47 with a possible maximum score of 79 (a range of 126). To summarise, those scoring at the lower end reported more negative behaviours, those at the upper end more positive behaviours. The actual maximum reported for any consumer was 56, the minimum was -27 (a range of 83). There was a mean of 16.3602, median of 16 and mode

of 9 (although multiple modes did exist). The standard deviation is 13.68, skewness -.028 and kurtosis -.107 showing a relatively normal distribution (GER score, D (1513) = 0.02, p>.05 was normal). The GER measure allowed exploration of a range of PEBs and not just at a single behaviour such as recycling – which often dominates environmental behaviour studies (Vinning and Ebreo 2002). However in appreciation of this, and to allow comparison, four smaller GER scores were developed, each taking parts of the main GER measure, to look at more specific groupings of behaviour. The four GER groups were Leisure, Purchasing, Household and Travel. Unlike the main GER measure the GER scores within the smaller groupings were not normally distributed.

The issue of social desirability of behaviours is important in all environmental research and it is generally accepted that self reported behaviour does not always correspond to actual behaviour (Vinning and Ebreo 2002). It is hoped however that data collection via an impersonal online mechanism, rather than face to face, should encourage participants to be honest and open about their behaviour. Unfortunately due to the secondary nature of the data it was impossible to check actual behaviour to verify the behavioural reports. It is also suggested that as pro-environmental issues are generally socially approved, that respondents may overestimate their behaviours (Follows and Jobber, 2000). Vinning and Ebreo (2002) suggest the need for a '*correction measure*' to overcome this but this could not be included here again due to the secondary nature of the data. In designing the GER measure the authors also tried to take into account other methodological challenges in the research area summarised by Vinning and Ebreo (2002). For example they suggest the need to consider how behaviour is assessed and

suggest using frequency, duration and intensity as measures as well as whether the behaviour is performed at all. The data allowed both the actual performance and the level of that performance to be taken into account. For example respondents received extra points if they reported that they recycled '*often'* rather than '*a little*'.

A range of exploratory analyses were completed to investigate the data and specifically the effects of responsibility. Consumers were firstly categorised by their answers to the responsibility questions and the correlations with their GER score. In some cases a linear regression analysis was also used. The same analyses were then completed based on segmentations by age, education, sex, UK region and social class although not all analyses will be reported here.

A large amount of demographic data was collected within the questionnaire. Of the 1513 consumers questioned 47.5 % were male, 52.5 % were female. With regards age 32.3 % were between the ages of 16 and 34, 34.6 % were between the ages of 35 and 54, 13.9 % were between the ages of 55 and 64 and 19.2% were over 65 years of age.

Results

Initial demographic analyses exploring the first research question, the role of demographic variables in environmentally responsible behaviours, showed that the general GER increased with age from a mean of 14.63 in the age group 16-34 to 19.80 for the 65+ age group (see Table One) and is largely supported across the other GER groupings. The level of GER also increased as educational level increased (from 15.41

for 5 grade C GCSEs or less to 18.32 for those with a professional qualification) and a similar pattern is somewhat evident in the other GER groupings. Females also have a higher mean score than men (18.41 compared to 14.09) and this is supported across the GER sub groupings. The female GER mode is also much larger than the male GER mode score (25 for women compared to 9 for men). However GER scores do not show any clear pattern by social class or by region.

-INSERT TABLE ONE ABOUT HERE-

In attempting to answer this first research question it can be seen that there is some demographic influence although this is not always significant or consistent across categorisations. Table Two contains GER scores for each responsibility orientation segmented by responsibility orientation and by sex and age.

-INSERT TABLE TWO ABOUT HERE-

Although not always significantly different the general trend is that women have higher GER scores than men (supporting the results in Table One). In terms of age there is a strong tendency for higher average GER scores amongst older individuals (again supporting the results in Table One). Similar explorations were performed for education level and social class although no discernable pattern was found. In answering research question two therefore, as with question one there is some correlation between demographic variables and specific responsibility orientations although these are strongest within age and sex categorisations. Table Two also contains useful information in terms of research question three. Where consumers ascribe responsibility for *causing* climate change to someone (including themselves) or something in general their GER scores were higher. In comparison GER scores were lower if the participant ascribed

responsibility for *tackling* climate change to someone or something (including themselves). By comparing the upper and lower sections of Table Two it can be seen, for example, that if a consumer responded that they as an individual felt responsible for causing climate change, they would also see it is their responsibility to tackle climate change. In fact many more consumers reported that they felt responsible for tackling climate change than for causing it (834 compared to 331 individuals). This type of pattern is also prominent for Central Government, Local Government, NGOs/not for profit organisations and Local community groups where many more consumers reported thinking that it was these organisations' responsibility to tackle climate change, than thought of them as causing climate change. For example 428 respondents ascribed responsibility to Central Government for causing climate change while 1056 suggested that Central Government had a responsibility to tackle it. Moving briefly into another area of the questionnaire (trust) it can be seen that Pearson correlation between '*trust of the UK government*' and stating that '*it is central governments responsibility to tackle climate change*' ($r = .143$, $p < .01$) suggests that those who trust the government are more likely to say it is the government's responsibility. However only 35% of respondents said they trusted them, while 69% thought it was their responsibility to tackle climate change.

Table Three contains Pearson correlation coefficients for GER and responsibility orientation for both the overall GER score and for the four separate GER groupings.

-INSERT TABLE THREE ABOUT HERE-

There are significant positive correlations between GER scores and responsibility orientation for causing climate change with the only negative correlations for respondents

who answered '*other*' or '*don't know*'. The opposite case is found for those consumers responding to the question '*Whose responsibility do you think it is to tackle climate change?*' with no statistically significant correlations between GER score and responsibility for tackling climate change. It can also be seen that the significance of each GER grouping differs in terms of responsibility orientation (both in terms of responsible for causing and tackling climate change). In terms of the Leisure GER the results are quite weak and while overall there is a general increase in GER if you see yourself or other individuals as responsible, this does not continue into other responsibility orientations such as perceiving organisations and governments as responsible. For the Purchasing GER the correlation is more statistically significant with those who see individuals as responsible also displaying higher levels of PEB. A similar pattern was also displayed for the Household GER.

The Travel GER shows mixed results with certain responsibility orientations (if the consumer sees themselves, service industries or developing countries as responsible for tackling climate change) they will also display a larger GER score. In general a responsibility orientation of whichever type tends to be correlated more strongly with household or purchasing behaviours.

Table Four contains Pearson correlation coefficients for GER against a range of 20 attitude statements contained in the questionnaire.

-INSERT TABLE FOUR ABOUT HERE-

Only three attitude statements correlate significantly with general GER: '*Climate change has occurred many times in human history and it's part of the natural shifting of*

the climate', '*It's too late to do anything about climate change*' and '*Attempts to tackle climate change should be coordinated at an international level to be successful*'. However, the lack of correlation between attitudes and behaviour has been documented widely so the lack of correlation here is perhaps unsurprising (Sutton, 1998; Foxall 2002; Sheeran 2002). In terms of the GER groupings, the attitude statements showed some interesting results. '*I am concerned about the effects of climate change*' correlated strongly with the GERs for Leisure, Purchasing Activities and Travel. '*Consumers can help reduce the impact of climate change if they can change what they buy on a regular basis*' perhaps unsurprising correlated more highly with the GER for Purchasing Activities and Household Activities, but also more surprisingly with the GER for Leisure.

Tables Five, Six, Seven, Eight and Nine contain results of simultaneous linear regression analyses for general GER and each of the GER groupings. Only those statements which were significant predictors within the models are included in the tables. The significant predictors were also largely supported by subsequent stepwise regression analyses. Adjusted R Square values for each analysis were: General GER 0.250, GER Household Activities 0.145, GER All Travel 0.101, GER Purchasing Activities 0.214 and GER Leisure 0.118. This suggests that GER predicts between 10 and 25% of the variance in consumers behaviour. Although not directly comparable due to differing methodologies and measures (the work used a sample of consumers specifically interested in aspects of driving from two Swiss transportation associations) this is lower than the 55% of person's ecological behaviour that Kaiser and Shimoda (1999) suggest can be predicted by their measure of responsibility judgement.

-INSERT TABLES FIVE, SIX, SEVEN, EIGHT AND NINE ABOUT HERE-

Most notable across all the regression analyses is that the attitudinal statements form a larger proportion of significant predictors. Responsibility orientation (both in causing and tackling climate change) did however play a larger part taking into account those predictors that fell just short of the significance level required (and hence are not included in the tables). In line with the above correlations the answer '*don't know*' played a larger predictive part than might have been expected. Within the household activities GER an increased agreement with the statement '*climate change is largely caused by human activities*' surprisingly predicted a small reduction in the dependant variable, GER. Common predictors (of both increases and decreases in GER) across all groupings included responsibility for causing and tackling climate change being apportioned to local/central government and greater agreement with the statements '*I am concerned about the effects of climate change*', '*I don't see why I should take action on climate change if other people are not*' and '*I would switch my custom to companies that are working to reduce climate change*' (a greater predictor in general and purchasing activity GERs).

It is obviously difficult given the above results and those further contained in the tables to provide a definitive answer to research question three. While the correlation analysis suggests a greater part played by responsibility orientations, especially those regarding individuals perceiving themselves and/or other individuals as responsible, the regression analyses suggest a heavier weighting toward the attitudinal statements and some considerably more than others. While the nature of the data might explain some

inconsistencies there are still a number of interesting and useful aspects that have been highlighted.

Discussion & Conclusions

This research demonstrates a clear relationship between a consumers' sense of environmental responsibility and their environmentally-related consumption behaviours. Although the influence of this sense of responsibility is often weak compared to other factors, it is still significant, and this demonstrates the worth of approaches such as the VBN Model in helping to understand PEB. By contrast it shows that the more conventional and commonly-used models based on Theory of Planned Behavior and Theory of Reasoned Action (Ajzen and Fishbein, 1980; Ajzen 1991), which omit any notion of consumer responsibility, are missing a significant factor.

The nature of the relationship between a sense of responsibility and behaviour however remains intriguing. The assumption people might draw from the VBN Model is that a sense of responsibility would drive environmental behaviours. However, there is also evidence showing that involvement in a behaviour can also shape values (Tucker and Speirs, 2003), this begs the question as to whether involvement in certain environmental behaviours could lessen a consumers' sense of responsibility? As Downing and Ballantyne (2007) note: "*Many consumers still seek to make changes at the margins of their lifestyles and do not perceive a need for a fundamental shift in behaviour. Moreover, their actions do not appear consistent, well planned or systematic – when asked unprompted what they are doing to confront climate change, most cannot identify*

anything beyond recycling, begging the question whether this has become a token behaviour that discharges responsibility in other areas…"

The study also showed that, despite the controversy about their uses, socio-demographic variables can still be useful in understanding and predicting pro-environmental behaviours. The higher GER scores amongst females supported various studies suggesting that females are more concerned than men about the environment in relation to household behaviours (e.g. Teisl et al. 2008). GER also has a positive relationship with Education, supporting findings of other studies (e.g. Teisl et al. 2008). The NRS Social Grade categories did not prove conclusive for GER score, in accord with findings by Consumer Focus (Yates, 2009) that consumers from across all social grades engage in some way with certain 'green' behaviours. This rather contradicts the frequently expressed view that environmental issues like climate change are '*middle class issues'*. GER also has a positive relationship with age, suggesting that either older people have a broader knowledge of environmental responsibility, or that a sense of responsibility is something that matures over time, or a declining sense of responsibility amongst younger generations as observed in the USA by Wray-Lake et al. (2010).

Consumer environmental attitudes and knowledge are two of the most commonly cited influences on behaviour, and the results provided further support for that. Consumers' concern for the environment was generally seen to be a good predictor for a higher GER score, whilst consumers responding '*other*' or '*don't know*' to questions about responsibility for causing or tackling climate change generally had lower levels of

GER. This suggests that there might be a genuine lack of information or education amongst this cohort, and an inability to make the relevant connections between the issue of climate change and their own lifestyles and behaviours (something which has been shown to be important in motivating PEB, Pilgrim et al. 2007).

The results of this study add to the growing weight of evidence that consumer behaviour, and the factors that influence it, varies across different types of PEB. Exploring the differing types of GER, consumers were less affected by feelings of responsibility in their leisure and travel activities even though there was a correlation with the attitude statement that '*Consumers can help reduce the impact of climate change if they can change what they buy on a regular basis'*. This resonates with Becken (2007) who found that, when discussing individual responsibility for GHG emissions, tourists were more likely to consider environmental factors in their every day life activities and decision making as opposed to when undertaking a more '*extraordinary*' activity or decision to travel: "*The value of freedom to travel is firmly established in the minds of many tourists and limiting travel is considered unacceptable by the (hyper) mobile tourists who participated in this research*". Similarly, McDonald et al. (2006) identified a consumer segment of '*Exceptors*' who sought to make sustainability orientated changes to their lifestyles, but who kept specific types of behaviour outside this decision framework (particularly foreign travel and car use).

Through focus group research, Niva and Timonen (2008) uncovered that consumers perceived their own opportunities to influence the product-oriented market as

small; rather they attributed the responsibility to product manufacturers. Realising an element of control over '*extraordinary*' consumption habits, such as travel is therefore a key challenge in incorporating such behaviours within consumer perceptions of their own sphere of influence and responsibility. It also raises interesting questions about whether consumers feel responsible for a choice they make in a supermarket aisle or in their own kitchen, but would not feel in any way responsible for the fact that an aircraft they were sitting in was flying. This could be an interesting focus for further research.

This exploratory study has the key advantages compared to many other studies of employing a multi-dimensional approach to PEB and employing a relatively large sample size (for example, Kaiser and Schimoda (1999) surveyed 445 people; and Van Kenhove et al.'s (2001) study had a sample of 286). Its use of the GER score also provides a novel approach to approximating the net environmental impacts of domestic consumption behaviour which could be developed further. It generated some interesting if tentative findings, which open up avenues for further research on the topic of responsibility (and in particular in terms of consumer responsiveness to environmental issues when they hold others more responsible than themselves) - an issue that until now has been largely overlooked in the literature.

The findings however need to be considered in the light of the study's limitations, particularly those linked to the roots of the data collection process in a business-focussed survey that was not designed for purely academic research. Furthermore, this survey shares a limitation that is widespread within green consumer research of relying on self-

reported behaviours or behavioural intentions rather than measuring actual behaviour (Follows and Jobber, 2000). In view of the frequently reported gap between attitudes and behaviour (Vermeir and Verbeke, 2006, Zaccaï, 2006) it is important to attempt to develop direct or indirect measures that assess behaviour, to overcome the reporting of socially desirable answers or tendencies to over-estimate PEB (Vinning and Ebreo, 2002). In relation to this study, an avenue for future research would be to seek to research the influence of perceived consumer responsibility in relation to climate change causes and solutions on actual PEBs.

A key implication of this research is that there is unquestionably a perception of a shared responsibility for dealing with climate change amongst consumers. This could create opportunities for companies, governments and NGOs to develop strategies and partnership which build on this and which could perhaps benefit from complementary relationships about their varying responsibilities and resources for tackling climate change. Halpern and Bates (2004) suggest that co-production and a sense of partnership between state, individuals and communities should succeed in increasing notions of personal responsibility in areas such as climate change, amongst others. Consequently, since the majority of survey respondents felt that Central Government should be responsible for leading on a solution for climate change, despite low trust in them; this therefore implies that there is an opportunity for government to further cooperate with NGOs and Businesses, along the lines of the '*New Social Compact*' outlined by Brugmann and Prahalad (2007) in increasing notions of personal consumer responsibility. Effectively communicating such developments to consumers in such a way that

encourages them to take responsibility for changing their behaviours will be an important future challenge for commercial and social marketers alike.

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Table One: GER by socio demographic factors: Age, Education, Sex and Social Class

	Mean Score				
	GER	Leisure GER	Purchasing GER	Household GER	Travel GER
Age					
16-34	14.63	-.10	1.14	13.43	-.37
35-54	15.53	-.38	1.07	15.25	-1.27
55-64	17.69	-.36	1.82	16.13	-.82
65+	19.80	.37	1.53	17.31	.60
Education					
5 grade C GCSEs (or equivalent) or less	15.41	.00	.15	15.02	-.17
More than 5 grade C GCSEs (or equivalent)	15.20	-.20	.52	14.87	-.62
A levels/ AS levels/Scottish Highers/NVQ levels 3 or 4	15.68	-.21	.92	14.92	-.62
Undergraduate degree or equivalent	16.89	-.40	1.84	15.36	-.78
Postgraduate degree or equivalent	18.09	-.13	3.19	15.19	-.81
Professional qualification	18.32	.14	2.55	15.93	-.60
Sex					
Male	14.09	-.30	-.06	14.76	-1.12
Female	18.41	.00	2.51	15.56	-.05
Social Class					
A	16.19	-.24	1.22	15.50	-.98
B	17.28	-.49	2.03	16.00	-1.32
C1	16.49	-.15	1.39	15.22	-.56
C2	14.73	-.50	.72	14.71	-1.16
D	14.32	-.07	-.30	14.54	-.35
E	17.81	.63	1.67	14.76	1.03
Region					
Scotland	13.38	-.75	.82	13.97	-1.42
Yorkshire & Humberside	14.36	-.21	.50	14.75	-.89
North East	13.90	-.65	-.27	15.62	-1.44
North West	15.81	-.06	1.65	14.87	-.71

East Midlands	18.44	-.10	2.20	16.65	-.41
West Midlands	15.92	-.15	1.42	15.17	-.67
East of England	18.67	.05	2.19	16.59	-.11
South East	16.04	-.04	1.11	15.34	-.40
South West	14.69	.-.54	1.04	14.51	-.87
London	15.91	.49	.88	14.47	.56
Wales	18.37	.08	3.11	15.68	-.43

Table Two: responsibility orientation and overall GER score segmented by Sex and Age

			MALE		FEMALE		AGE GROUP 16-34		AGE GROUP 35-54		AGE GROUP 55-64		AGE GROUP 65+	
	Number of respondents	Mean GER	Number of respondents	Mean GER	Number of respondents	Mean GER	Number of respondents	Mean GER	Number of respondents	Mean GER	Number of respondents	Mean GER	Number of respondents	Mean GER
Q Who do you see as most responsible for causing climate change?														
Me as an individual	331	21.8	134	19.1	197	22.6	115	20	121	19.9	45	24.7	50	26.3
Other individuals	295	21.3	113	19.3	182	22.5	112	18.5	107	20.3	37	26.2	39	27.2
Private Industry	963	17.7	447	15.5	516	19.6	310	15.6	324	16.9	138	18.7	191	21.5
Central/Local Government	454	18.2	212	15.7	242	20.4	145	16.4	166	17.31	63	18.8	80	22.7
NGOs/Not for profit organisations	81	21.2	35	20.5	46	21.6	33	19.3	28	19.8	8	17.3	12	32.1
Local community groups	81	21.0	32	22.0	49	20.4	35	18.8	26	20.3	9	18.1	11	32.2
Developing countries	748	17.4	368	15.2	380	19.6	196	15.2	248	16.2	122	18.6	182	20.6
Other	133	13.2	84	10.9	49	17.1	33	12.3	42	12.8	26	12.7	32	14.9
Don't know	196	12.9	63	10.4	133	14.1	86	11.8	66	11.7	22	19.5	22	14
Q Whose responsibility do you think it is to tackle climate change?														
Me as an individual	834	16	368	17.7	466	21.3	269	16.9	301	19	118	21.5	146	25.1
Other	703	15.9	305	18.0	398	21.0	240	17.3	253	18.6	98	22.1	112	25.3

individuals														
Private Industry	916	18.4	410	16.2	506	20.2	228	16.3	320	17.2	132	19.8	176	23
Central/Local Government	1080	17.4	506	15.3	574	19.2	330	15.6	374	16.2	155	18.7	221	21.3
NGOs/Not for profit organisations	558	16.1	246	18.7	312	21.3	194	17.3	199	20.1	79	22.5	86	24.5
Local community groups	571	16	256	18.9	315	21	197	17.5	203	19.7	80	21.7	91	24.8
Developing countries	869	16.5	415	16.3	454	20.4	251	16.4	299	17.3	127	20.4	192	21.6
Other	175	15.8	86	13.4	89	18.0	51	15.8	60	14.3	36	15.8	28	18.6
Don’t know	152	15.3	64	5.5	88	12.1	65	8.8	50	7.4	19	12.1	18	13.2

Table Three: Pearson Correlations of GER and Responsibility Orientation

	GER	*Leisure GER*	*Purchasing GER*	*Household GER*	*Travel GER*
Who do you see as most responsible for causing climate change?					
Me as an individual	.186(**)	.102(**)	.183(**)	.131(**)	.074(**)
Other individuals	.177(**)	.104(**)	.174(**)	.119(**)	.082(**)
Private Industry	.170(**)	.101(**)	.127(**)	.157(**)	.093(**)
Central/Local government	.109(**)	.073(**)	.117(**)	.067(**)	.036
NGOs/Not for profit organisations (e.g. Friends of the Earth)	.083(**)	.058(*)	.086(**)	0.046	0.043
Local community groups.	.081(**)	0.039	.092(**)	0.044	0.027
Developing countries e.g. China, India	.077(**)	0.009	0.023	.142(**)	0.005
Other	-.072(**)	-.071(**)	-.057(*)	-0.041	-.076(**)
Don't know	-.098(**)	-.053(*)	-.080(**)	-.109(**)	-0.005
Whose responsibility do you think it is to tackle climate change?					
Me as an individual	-0.027	.117(**)	.250(**)	.213(**)	.104(**)
Other individuals	-0.033	.090(**)	.202(**)	.186(**)	.094(**)
Private Industry	.226(**)	.123(**)	.187(**)	.187(**)	.122(**)
Central/Local government	.172(**)	.072(**)	.141(**)	.156(**)	.072(**)
NGOs/Not for profit organisations (e.g. Friends of the Earth)	-0.015	.080(**)	.183(**)	.181(**)	.073(**)
Local community groups.	-0.021	.096(**)	.178(**)	.175(**)	.094(**)
Developing countries e.g. China, India	0.01	.053(*)	.117(**)	.204(**)	.055(*)
Other	-0.014	-0.048	-0.019	0.014	-0.043
Don't know	-0.025	-.096(**)	-.125(**)	-.167(**)	-.083(**)

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table Four: Pearson Correlations of GER and Attitude Statements

	GER	*Leisure GER*	*Purchasing GER*	*Household GER*	*Travel GER*
I am concerned about the effects of climate change	-0.022	.245(**)	.320(**)	.275(**)	.237(**)
The media is exaggerating the potential effects of climate change	0.034	-.187(**)	-.161(**)	-.088(**)	-.175(**)
Climate change is largely caused by human activities	0.005	.189(**)	.167(**)	.129(**)	.161(**)
Climate change has occurred many times in human history and it's part of the natural shifting of the climate	.054(*)	-.127(**)	-.088(**)	-0.029	-.096(**)
The economic growth of developing countries represents the greatest threat to the world's climate (China India etc).	0.015	0.044	.083(**)	.112(**)	0.023
It is too late to do anything about climate change	.055(*)	-.073(**)	-.147(**)	-.213(**)	-.061(*)
Attempts to tackle climate change should be coordinated at an international level to be successful	-.067(**)	.071(**)	.141(**)	.144(**)	.076(**)
The Government should enforce more strict environmental policies in order to prevent climate change	0.006	.172(**)	.238(**)	.173(**)	.159(**)
Off-setting carbon emissions is a good way of reducing the effects of climate change	-0.023	.185(**)	.144(**)	.114(**	.196(**)
Consumers can help reduce the impact of climate change if they can change what they buy on a regular basis	-0.021	.215(**)	.324(**)	.231(**)	.177(**)
There is no point in trying to reduce emissions at an individual level	0.027	-.140(**)	-.254(**)	-.276(**)	-.137(**)
I want financial incentives to take action on climate change	0.029	-0.046	-.053(*)	-0.041	-.059(*)
I don't see why I should take action on climate change if other people are not	0.021	-.176(**)	-.260(**)	-.265(**)	-.167(**)
Businesses should take the issue of	-0.039	.174(**)	.252(**)	.255(**)	.171(**)

climate change more seriously					
Businesses should send documents such as statements and policy documents electronically wherever possible	-0.048	.127(**)	.214(**)	.216(**)	.126(**)
I want more information from businesses on what they are doing to address climate change	0.009	.244(**)	.287(**)	.207(**)	.232(**)
I trust companies to do the right thing when it comes to climate change	0.027	0.024	-0.022	-0.011	0.024
I would switch my custom to companies that are working to reduce climate change	-0.027	.281(**)	.386(**)	.233(**)	.236(**)
I would rather companies took the choice out of my hands by not stocking products that are damaging to the environment	-0.012	.121(**)	.183(**)	.132(**)	.135(**)
I would like more independent assurance of the claims made by companies about how they are tackling climate change	-0.041	.194(**)	.263(**)	.217(**)	.176(**)

** Correlation is significant at the 0.01 level (2-tailed).
* Correlation is significant at the 0.05 level (2-tailed).

Table Five: Regression Analysis of GER (only significant independent variables are included)

	B	SE B	β
Who do you see as responsible for causing climate change?: Local Government	-2.48	1.20	-.07*
Whose responsibility do you think it is to tackle climate change?: Central Government	-2.37	1.03	-.08*
Whose responsibility do you think it is to tackle climate change?: Don't know	-3.04	1.44	-.07*
I am concerned about the effects of climate change	1.81	0.42	.15**
Climate Change is largely caused by human activities	-0.93	0.36	-.08**
Attempts to tackle climate change should be coordinated at an international level to be successful	-.084	0.39	-.06*
Consumer can help reduce the impact of climate change if they can change what they buy on a regular basis	1.47	0.42	.11**
There is no point in trying to reduce emissions at an individual level	-0.96	0.36	-.08**
I want financial incentives to take action on climate change	-0.92	0.28	-.08**
I don't see why I should take action on climate change if other people are not	-1.60	0.35	-.13**
I want more information from businesses on what they are doing to address climate change	1.04	0.41	.09**
I would switch my custom to companies that are working to reduce climate change	2.77	0.43	.21**

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table Six: Regression Analysis of GER Household Activities (only significant independent variables are included)

	B	SE B	β
Who do you see as responsible for causing climate change?: Local Government	-1.53	0.57	-.10**
Who do you see as responsible for causing climate change?: Developing countries e.g. China, India	0.86	0.39	.07*
I am concerned about the effects of climate change	0.63	0.20	.12**
The media is exaggerating the potential effects of climate change	0.29	0.15	.06*
Climate change is largely caused by human activities	-0.38	0.17	-.07*
It is too late to do anything about climate change	-0.31	0.16	-.06*
Attempts to tackle climate change should be coordinated at an international level to be successful	-0.39	0.18	-.07*
There is no point in trying to reduce emissions at an individual level	-0.53	0.17	-.10**
I would switch my custom to companies that are working to reduce climate change	0.44	0.20	.08*

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table Seven: Regression Analysis of GER All Travel (only significant independent variables are included)

	B	SE B	β
Who do you see as responsible for causing climate change?: NGOs/Not for Profit organisations (e.g. Friends of the Earth)	1.31	0.65	.08*
Who do you see as responsible for causing climate change?: Don't Know	0.80	0.37	.08*
Whose responsibility do you think it is to tackle climate change?: Central Government	-0.77	0.30	-.10*
Whose responsibility do you think it is to tackle climate change?: Don't Know	-1.09	0.42	-.09**
I am concerned about the effects of climate change	0.38	0.12	.12**
The media is exaggerating the potential effects of climate change	-.23	0.09	-.08*
It is too late to do anything about climate change	0.20	0.10	.06*
Off-setting carbon emissions is a good way of reducing the effects of climate change	0.30	0.10	.09**
I want financial incentives to take action on climate change	-0.22	0.08	-.07**
I don't see why I should take action on climate change if other people are not	-0.28	0.10	-.09**
I want more information from businesses on what they are doing to address climate change	0.46	0.12	.14**
I would switch my custom to companies that are working to reduce climate change	0.29	0.13	.08*

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table Eight: Regression Analysis of GER Purchasing Activities (only significant independent variables are included)

	B	SE B	β
Whose responsibility do you think it is to tackle climate change?: Me as an individual	1.43	0.73	0.9*
Whose responsibility do you think it is to tackle climate change?: Central Government	-1.47	0.63	-.08*
I am concerned about the effects of climate change	0.81	0.26	.11**
Climate change is largely caused by human activities	-0.60	0.22	-.08**
Consumer can help reduce the impact of climate change if they can change what they buy on a regular basis	1.09	0.26	.14**
I want financial incentives to take action on climate change	-0.50	0.17	-.07**
I don't see why I should take action on climate change if other people are not	-0.69	0.212	-.10**
I would switch my custom to companies that are working to reduce climate change	2.04	0.26	.26**

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.

Table Nine: Regression Analysis of GER Leisure (only significant independent variables are included)

	B	SE B	β
Who do you see as responsible for causing climate change?: NGOs/Not for Profit organisations (e.g. Friends of the Earth)	1.02	0.44	.09*
Whose responsibility do you think it is to tackle climate change?: Central Government	-0.59	0.20	-.11**
I am concerned about the effects of climate change	0.21	0.08	.10**
The media is exaggerating the potential effects of climate change	-0.14	0.06	-.07*
I don't see why I should take action on climate change if other people are not	-0.20	0.07	-.09**
I would switch my custom to companies that are working to reduce climate change	0.35	0.08	.15**

** Correlation is significant at the 0.01 level.

* Correlation is significant at the 0.05 level.